



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------------------|-----------------------------|
| 10/656,280 | 09/08/2003 | Tatsuya Niimi | 242548US2 | 7137 |
| 22850 7590 05/15/2007 OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314 | | | EXAMINER DOTE, JANIS L | |
| | | | ART UNIT 1756 | PAPER NUMBER |
| | | | NOTIFICATION DATE 05/15/2007 | DELIVERY MODE ELECTRONIC |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary

Application No.

10/656,280

Applicant(s)

NIIMI ET AL.

Examiner

Janis L. Dote

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 19 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-20 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date See Continuation Sheet.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date
:12/08/03;03/13/06; 04/05/06;05/22/06;08/07/06.

Art Unit: 1756

1. The examiner acknowledges the amendments to claims 1-3, 6, 8, 10, and 13-18 filed on Jun. 6, 2006. Claims 1-20 are pending.

2. Applicants' election without traverse of the invention of Group I, claims 1-18, in the reply filed on Nov. 14, 2005, is acknowledged.

3. Claims 19 and 20 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on Nov. 14, 2005.

4. The examiner has considered only the copies of the originally filed claims, abstract, and drawings, provided by applicants on Apr. 5, 2006, of the US applications, listed on "List of related cases" in the Information Disclosure statement filed on Dec. 8, 2003.

The examiner has considered the US applications, listed on the "List of related cases" in the Information Disclosure statements filed on Mar. 13, 2006, and on May 22, 2006.

Art Unit: 1756

5. The drawing sheet filed on Jun. 6, 2006, did not comply with 37 CFR 1.121(d) for the reasons discussed in the Notice of non-compliant amendment mailed on Jun. 13, 2006. Accordingly, the drawing sheet filed on Jun. 6, 2006, has not been entered.

6. The replacement drawing sheet filed on Jun. 19, 2006, is acceptable.

7. The objections to the drawings set forth in the office action mailed on Mar. 9, 2006, paragraphs 4 and 5, have been withdrawn in response to the amended paragraphs beginning at page 19, line 6, and at page 28, line 16, of the specification, filed on Jun. 6, 2006; and in response to the replacement drawing sheet filed on Jun. 19, 2006.

The rejections of claims 1-18 under 35 U.S.C. 112, second paragraph, set forth in the office action mailed on Mar. 9, 2006, paragraph 8, have been withdrawn in response to the amendments to claims 1, 6, 8, 10, and 13-18 filed on Jun. 6, 2006.

The rejections of claims 1-18 under 35 U.S.C. 101, set forth in the office action mailed on Mar. 9, 2006, paragraphs 10 and 11, have been withdrawn in response to the amendments to claims 1 and 17 filed on Jun. 6, 2006.

Art Unit: 1756

8. The examiner notes that the instant specification at page 20, lines 13-18, defines the term "proximal charging system charging member" recited in instant claim 12 as "a charging member which is not brought into contact with but proximal to the surface of the photoconductor so as to have a gap of 200 μ m or less between the surface of a photoconductor and the surface of the charging member."

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15 is indefinite in the phrase "process cartridge in which the electrophotographic photoconductor is integral with at least one unit selected from the group consisting of . . . the cleaner" (emphasis added) for lack of unambiguous antecedent basis in claim 1, from which claim 15 depends. Claim 1 does not

Art Unit: 1756

recite the presence of a cleaner in the electrophotographic apparatus.

11. Claims 13 and 15 are objected to because of the following informalities:

In claim 13, the typographic error "gm" in the phrase "200 gm or less" should be corrected to read -- 200 μ m or less --. See originally filed claim 13.

In claim 15, the phrase "is configured to be applied alternating superposed voltage" is not idiomatic English.

Appropriate correction is required.

12. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

13. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,430,526 (Ohkubo) combined with US 2002/0076633 A1 (Niimi'633).

Ohkubo discloses a process cartridge that comprises all the components recited in instant claims 17 and 18, but for the particular photosensitive member. Fig. 2 and col. 3, line 65, to col. 4, line 8. The process cartridge shown in Fig. 2 comprises the photosensitive drum 3, a charging roller 4, a

Art Unit: 1756

developing device 5, and cleaning unit 8. Ohkubo teaches that the process cartridge is attachably or detachably mounted as a unit relative to an electrophotographic image forming apparatus. Col. 3, lines 63-65.

As discussed above, Ohkubo does not disclose the use of the photosensitive member recited in the instant claims. However, Ohkubo does not limit the type of photosensitive member used. See reference claims 9 and 10.

Niimi'633 discloses an electrophotographic photoconductive drum comprising a conductive support, a charge generation layer, and a charge transport layer disposed on the charge generation layer. The charge generation layer comprises titanyl phthalocyanine crystals that exhibit an X-ray diffraction pattern having a maximum peak at a Bragg angle ($2\theta \pm 0.2^\circ$) of 27.2° , a lowest peak at 7.3° , peaks at 9.4° , 9.6° , and 24° , no peaks between 7.4° and 9.3° , and no peak at 26.3° . The diffraction pattern is obtained by irradiating the titanyl phthalocyanine with an X-ray of Cu-K α having a wavelength of "1.541 Å." Paragraph 0151; Fig. 6; and example 28 at pages 32-33. The location of the peaks at angles 7.3° , 9.4° , 9.6° , and 24° were determined by measuring the positions of the peaks with a ruler and interpolating the positions on the x-axis scale in Fig. 6. The titanyl phthalocyanine meets the

Art Unit: 1756

phthalocyanine limitations recited in instant claim 17.

According to Niimi'633, its photoconductive drum has good mechanical durability and electrostatic durability, and is capable of providing "high quality images even in repeated use."

Paragraph 0045.

It would have been obvious for a person having ordinary skill in the art to use the photosensitive drum disclosed by Niimi'633 as the photosensitive drum in the process cartridge disclosed by Ohkubo. That person would have had a reasonable expectation of successfully obtaining an electrophotographic process cartridge that has good mechanical durability and electrostatic durability, and that is capable of providing "high quality images even in repeated use."

The claim language, "used as a detachable member and formed integral with an electrophotographic apparatus . . . " recited in instant claims 17 and 18 is a statement of intended use that does not distinguish the process cartridge rendered obvious over the cited prior art. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. As discussed above, the process

Art Unit: 1756

cartridge rendered obvious over the combined teachings of Ohkubo and Niimi'633 meets the process cartridge structural components recited in the instant claims. Thus, the intended use recited in the instant claims does not result in a structural difference between the process cartridge recited in the instant claims and the process cartridge rendered obvious over the cited prior art.

14. Claims 17 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by US 2004/0033428 A1 (Niimi'428).

Niimi'428 discloses an electrophotographic photoconductive drum comprising a conductive support, a charge generation layer, and a charge transport layer disposed on the charge generation layer. The charge generation layer comprises titanyl phthalocyanine crystals that exhibit an X-ray diffraction pattern having a maximum peak at a Bragg angle ($2\theta \pm 0.2^\circ$) of 27.2° , a lowest peak at 7.3° , peaks at 9.4° , 9.6° , and 24.0° , no peaks between 7.4° and 9.3° , and no peak at 26.3° . The diffraction pattern is obtained by irradiating the titanyl phthalocyanine with an X-ray of Cu-K α having a wavelength of "1.542 Å." Paragraphs 0062-0064; Fig. 9; example 1 at page 14 and in Table 1 at page 15; and example 8 at pages 17-18. The titanyl phthalocyanine meets the phthalocyanine limitations recited in instant claim 17. Niimi'428 further teaches that its

Art Unit: 1756

photoconductive drum can be used as the photoconductive member of a process cartridge where the cartridge further comprises a charger, a developer, an image transfer device, a cleaner, or a discharger. Paragraph 0158 and reference claim 19. The process cartridge disclosed by Niimi'428 meets the process cartridge structural elements recited in instant claims 17 and 18.

The claim language "used as a detachable member and formed integral with an electrophotographic apparatus . . . " recited in instant claims 17 and 18 is a statement of intended use that does not distinguish the process cartridge disclosed by the cited prior art. As discussed above, the process cartridge disclosed by Niimi'428 meets the process cartridge structural components recited in the instant claims. Thus, the intended use recited in the instant claims does not result in a structural difference between the process cartridge recited in the instant claims and the process cartridge disclosed by the cited prior art.

15. Claims 1, 2, 5, 7, 8, 10, 11, 13, and 15-18 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,853,823 (Sugino).

Sugino discloses an image forming apparatus and a process cartridge that meet the apparatus and the process cartridge

Art Unit: 1756

limitations recited in the instant claims. The image forming apparatus comprises a photoreceptor **1**, a charger **3**, a light irradiator **5**, an image developer **6**, and a transfer device **10, 11**. Fig. 3, and col. 10, line 53, to col. 11, line 15. Sugino further teaches an image forming apparatus comprising a plurality of image forming units, each comprising a photoreceptor **101**, a charger, a light irradiator, an image developer, a cleaner, and a transfer device **102**. Fig. 5 and col. 12, lines 34-43. Sugino also teaches a process cartridge that comprises a photoreceptor with a charger, an image irradiator, or an image developer. See reference claim 9. Sugino teaches that the charger can be a charging roller, which meets the charger limitation recited in instant claims 11 and 13. Col. 10, lines 60-61. Sugino teaches that the light irradiator can emit a write light having a resolution of 600 dpi, 1,200 dpi, or 2,400 dpi. Col. 17, lines 25-27; and col. 19, lines 24-26. The photoreceptor comprises a conductive support, a charge generation layer, a charge transport layer disposed on the charge generation layer, and a protective layer. Example 1 at cols. 16-17. The charge transport layer is formed using tetrahydrofuran, a non-halogen solvent, which meets the solvent limitations recited in instant claims 7 and 8. The protective layer comprises alumina fine particles, which meet

Art Unit: 1756

the protective layer limitations recited in instant claim 5. The charge generation layer comprises titanyl phthalocyanine crystals that exhibit an X-ray diffraction pattern having a maximum peak at a Bragg angle of 27.2° , a lowest peak at 7.3° , peaks at 9.4° , 9.6° , and 24° , no peaks between 7.4° and 9.3° , and no peak at 26.3° . Fig. 7; and example 28 at pages 32-33. The location of the peaks at angles 7.3° , 9.4° , 9.6° , and 24° were determined by measuring the positions of the peaks with a ruler and interpolating the positions on the x-axis scale in Fig. 7. The X-ray diffraction pattern meets the peak location limitations recited in instant claims 1, 2, and 17.

Sugino does not disclose that the X-ray diffraction was obtained with the Cu-K α wavelength of 1.542 Å. However, as discussed above, the Sugino X-ray diffraction pattern meets the peak location limitations recited in instant claims 1, 2, and 17. Accordingly, it is reasonable to presume that the X-ray diffraction pattern disclosed in Sugino is determined with Cu-K α having the Cu-K α wavelength of 1.542 Å as recited in the instant claims. The burden is on applicants to prove otherwise. In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

Sugino does not disclose that the surface of the photoreceptor "exposed by the light irradiator requires 200 msec or less to reach the developer" as recited in instant claims 1

Art Unit: 1756

and 17. Nor does Sugino disclose that the apparatus comprises "an exposure energy when the write light having a resolution of 600 dpi or greater is irradiated from the light irradiator to . . . photoconductor is 5 erg/cm² or less on the surface thereof" as recited in instant claims 1 and 17. However, the recitations of how fast the photoreceptor moves from the light irradiator to the developer and of how much energy is required are merely functional language describing how the apparatus functions. For the reasons discussed supra, the apparatus and the process cartridge disclosed by Sugino meet all of the structural limitations recited in the instant claims. The recitations do not distinguish the structural elements in the instantly claimed apparatus and process cartridge from those in the apparatus and process cartridge disclosed by the cited prior art. "Claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function." MPEP 2114 and cases cited therein. "A claim containing a 'recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus' if the prior art apparatus teaches all the structural limitations of the claim." MPEP 2114, citing Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

Art Unit: 1756

16. US 2003/0104295 (Niimi'295) has a filing date of Mar. 22, 2002, and was published on Jun. 5, 2003, which are both prior to the filing date of the instant application. Thus, Niimi'295 qualifies as art under 35 U.S.C. 102(a), as well as under 35 U.S.C. 102(e). Accordingly, Niimi'295 also qualifies as prior art under 35 U.S.C. 103(c).

17. Claims 1, 2, and 4-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niimi'295 combined with US 2001/0022343 (Sakai).

Niimi'295 discloses an image forming apparatus and a process cartridge. The image forming apparatus comprises a photoreceptor **6**, a charger **8**, a light irradiator **10**, an image developer **11**, and a transfer device **15**. Fig. 5 and paragraphs 0115 to 0116 and 0122. Niimi'295 further teaches an image forming apparatus comprising a plurality of image forming units, each comprising a photoreceptor, a charger, a light irradiator, an image developer, and a transfer device. Fig. 10 and paragraphs 0127-0128. Niimi'295 also teaches a process cartridge that comprises a photoreceptor with a charger, an image irradiator, an image developer, and a cleaner. Fig. 7 and paragraph 0126. Niimi'295 teaches that the charger can be a contact charging system, such as a contact charging roller, as

Art Unit: 1756

recited in instant claim 11, or a non-contact proximal charging system as recited in instant claims 12 and 13.

Paragraphs 0117-0118. Niimi'295 also teaches that an alternating superimposed voltage can be applied to the charger, which meets the charger limitation recited in instant claim 14.

Paragraph 0119.

Niimi'295 exemplifies a photoreceptor comprising a conductive support, a charge generation layer, a charge transport layer disposed on the charge generation layer, and three protective layers. See example 14 at pages 24-26. All three protective layers comprise α -alumina fine particles having a resistivity of $2.5 \times 10^{12} \Omega \cdot \text{cm}$, which meets the protective layer limitations recited in instant claims 5 and 6. Niimi'295 further discloses that the three protective layers can comprise a charge transferring polycarbonate having a side-chain comprising a triarylamine structure; and are formed using non-halogen solvents such as tetrahydrofuran and cyclohexanone. See example 7 at pages 21-22. Because the first and second protective layers comprise the charge transferring polycarbonate, the layers are charge transport layers and therefore meet the charge transport layer limitations recited in instant claims 4, 7, and 8. Niim'295 also teaches that the conductive support can be an anodized surface as recited in

Art Unit: 1756

instant claim 9. Paragraphs 0047-0048. The charge generation layer comprises titanyl phthalocyanine crystals dispersed in a binder resin. The titanyl phthalocyanine crystals exhibit an X-ray diffraction pattern having a maximum peak at a Bragg angle of 27.2° , a lowest peak at 7.3° , peaks at 9.4° , 9.6° , and 24° , no peaks between 7.4° and 9.3° , and no peak at 26.3° . See Fig. 8. The location of the peaks at angles 7.3° , 9.4° , 9.6° , 24° , and 27.2° were determined by measuring the positions of the peaks with a ruler and interpolating the positions on the x-axis scale in Fig. 8. The X-ray diffraction pattern meets the peak location limitations recited in instant claims 1, 2, and 17.

Niimi'295 does not disclose that the X-ray diffraction was obtained with the Cu-K α wavelength of 1.542 Å. However, as discussed above, the Niimi'295 X-ray diffraction pattern meets the peak location limitations recited in instant claims 1, 2, and 17. Accordingly, it is reasonable to presume that the X-ray diffraction pattern disclosed in Niimi'295 is determined with Cu-K α having a wavelength of 1.542 Å as recited in the instant claims. The burden is on applicants to prove otherwise.

Fitzgerald, supra.

Niimi'295 does not disclose that its light irradiator provides a write light having a resolution of 600 dpi or greater as recited in the instant claims.

Art Unit: 1756

Sakai discloses a multi-beam scanning device to imagewise irradiate the charged photoconductor to form a latent electrostatic latent image. The multi-beam scanning device comprises a semiconductor laser (or laser diode) array **112** and a rotary polygonal mirror **152**. Fig. 6, paragraph 0131. The writing density of the multi-beam scanning device is 1200 dpi and the laser beam has a beam spot diameter of 30 μm .

Paragraph 0137. The writing density of 1200 dpi meets the resolution limitations recited in instant claims 1 and 16-18. According to Sakai, the multi-beam scanning device "effectively reduces the variations of the beam spots on the scanned surface to a smallest possible level so that the multi-beam scanning is carried out with accurate beam spot diameter so as to create good quality reproduced image." Sakai discloses that in conventional multi-beam scanning devices, the divergence angle of the laser beams emitted by the semiconductor laser array is liable to variations that cause the degradation of the quality of a reproduced image. Paragraph 0009.

It would have been obvious for a person having ordinary skill in the art to use the Sakai multi-beam scanning device as the light irradiator in the apparatus or the process cartridge disclosed by Niimi'295. That person would have had a reasonable expectation of successfully obtaining an image forming apparatus

Art Unit: 1756

and a process cartridge that provide good quality reproduced images having a resolution of 1200 dpi.

The cited prior art does not disclose that the surface of the photoreceptor "exposed by the light irradiator requires 200 msec or less to reach the developer" as recited in instant claims 1 and 17. Nor does the cited prior art disclose that the apparatus comprises "an exposure energy when the write light having a resolution of 600 dpi or greater is irradiated from the light irradiator to . . . photoconductor is 5 erg/cm² or less on the surface thereof" as recited in instant claims 1 and 17. However, the recitations of how fast the photoreceptor moves from the light irradiator to the developer and of how much energy is required are merely functional language describing how the apparatus functions. For the reasons discussed supra, the apparatus and process cartridge rendered obvious over the combined teachings of the prior art meet all of the structural limitations recited in the instant claims. The recitations do not distinguish the structural elements in the instantly claimed apparatus and process cartridge from those in the apparatus and process cartridge rendered obvious over the cited prior art.

18. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Niimi'295 combined with Sakai as applied to

Art Unit: 1756

claim 1 above, further combined with Japanese Patent 11-140337 (JP'337), as evidenced by Ladd et al., Structure Determination by X-ray Diffraction, p. 426. See the USPTO English-language translation of JP'337 for cites.

Niimi'295 combined with Sakai renders obvious an image forming apparatus as described in paragraph 17 above, which is incorporated herein by reference.

The claim is rejected for the reasons given in the office action mailed on Mar. 9, 2006, paragraph 21, which are incorporated herein by reference.

19. Claims 1, 2, 5-8, 10, 11, and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niimi'633 combined with Sakai.

Niimi'633 discloses an image forming apparatus that comprises a photoreceptor 1, a charger 8, a light irradiator 10, an image developer 11, and a transfer device 15a, 15b. Fig. 3 paragraphs 0061 and 0300-0305. Niimi'633 further teaches an image forming apparatus comprising a plurality of image forming units, each comprising a photoreceptor, a charger, a light irradiator, an image developer, a cleaner, and a transfer device. Fig. 7 and paragraphs 0320-0324. Niimi'633 teaches that the charger can be a contact charging system, such as a

Art Unit: 1756

contact charging roller; as recited in instant claim 11.

Paragraph 0302 and Fig. 3, reference label 8. Because the contact charging roller is in contact with the photoconductor, it meets the charger limitation recited in instant claim 13 that the gap between the charging member and the photoconductor is "200 μm or less." Niimi'633 also teaches that an alternating superimposed voltage can be applied to the charger, which meets the charger limitation recited in instant claim 14.

Paragraph 0302.

Niimi'633 exemplifies a photoreceptor comprising an aluminum conductive drum, a charge generation layer, a charge transport layer disposed on the charge generation layer, and a protective layer. See example 28 at pages 32-33. The protective layer comprises particulate alumina having a specific resistivity of $2.5 \times 10^{12} \Omega \cdot \text{cm}$, which meets the protective layer limitations recited in instant claims 5 and 6. The charge generation layer comprises titanyl phthalocyanine crystals dispersed in a binder resin. The charge generation layer comprises titanyl phthalocyanine crystals that exhibit an X-ray diffraction pattern having a maximum peak at a Bragg angle ($2\theta \pm 0.2^\circ$) of 27.2° , a lowest peak at 7.3° , peaks at 9.4° , 9.6° , and 24° , no peaks between 7.4° and 9.3° , and no peak at 26.3° . The discussion of the Niimi'633 charge generation layer in

Art Unit: 1756

paragraph 13 above is incorporated herein by reference. The X-ray diffraction pattern meets the peak location limitations recited in instant claims 1 and 2. Niimi'633 further teaches that the charge transport layer can be formed from a non-halogen solvent, such as tetrahydrofuran or dioxane, which meets the solvent limitations recited in instant claims 7 and 8. Paragraph 0173 and example 1 in paragraphs 0364-0367.

Niimi'633 does not disclose that its light irradiator provides a write light having a resolution of 600 dpi or greater as recited in the instant claims.

Sakai discloses a multi-beam scanning device to imagewise irradiate the charged photoconductor to form a latent electrostatic latent image. The multi-beam scanning device comprises a semiconductor laser (or laser diode) array **112** and a rotary polygonal mirror **152**. The scanning device provides a writing density of 1200 dpi and the laser beam has a beam spot diameter of 30 μm . The discussion of Sakai in paragraph 17 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art to use the Sakai multi-beam scanning device as the light irradiator in the apparatus disclosed by Niimi'633. That person would have had a reasonable expectation of

Art Unit: 1756

successfully obtaining an image forming apparatus that provides good quality reproduced images having a resolution of 1200 dpi.

The cited prior art does not disclose that the surface of the photoreceptor "exposed by the light irradiator requires 200 msec or less to reach the developer" as recited in instant claim 1. Nor does the cited prior art disclose that the apparatus comprises "an exposure energy when the write light having a resolution of 600 dpi or greater is irradiated from the light irradiator to . . . photoconductor is 5 erg/cm² or less on the surface thereof" as recited in instant claim 1. However, the recitations of how fast the photoreceptor moves from the light irradiator to the developer and of how much energy is required are merely functional language describing how the apparatus functions. For the reasons discussed supra, the apparatus and process cartridge rendered obvious over the combined teachings of the prior art meet all of the structural limitations recited in the instant claims. The recitations do not distinguish the structural elements in the instantly claimed apparatus and process cartridge from those in the apparatus and process cartridge rendered obvious over the cited prior art.

20. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Niimi'633 combined with Sakai, as applied to

Art Unit: 1756

claim 1 above, further combined with JP'337, as evidenced by Ladd et al., Structure Determination by X-ray Diffraction, p. 426. See the USPTO English-language translation of JP'337 for cites.

Niimi'633 combined with Sakai renders obvious an image forming apparatus as described in paragraph 19 above, which is incorporated herein by reference.

The claim is rejected for the reasons given in the office action mailed on Mar. 9, 2006, paragraph 23, which are incorporated herein by reference.

21. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Niimi'633 combined with Sakai, as applied to claim 1 above, further combined with US 2002/0051654 (Niimi'654).

Niimi'633 combined with Sakai renders obvious an image forming apparatus as described in paragraph 19 above, which is incorporated herein by reference.

The claim is rejected for the reasons given in the office action mailed on Mar. 9, 2006, paragraph 24, which are incorporated herein by reference.

Art Unit: 1756

22. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Niimi'633 combined with Sakai, as applied to claim 1 above, further combined with US 6,120,955 (Tokutake).

Niimi'633 combined with Sakai renders obvious an image forming apparatus as described in paragraph 19 above, which is incorporated herein by reference.

The claim is rejected for the reasons given in the office action mailed on Mar. 9, 2006, paragraph 25, which are incorporated herein by reference.

23. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niimi'633 combined with Sakai, as applied to claim 1 above, further combined with Niimi'654.

Niimi'633 combined with Sakai renders obvious an image forming apparatus as described in paragraph 19 above, which is incorporated herein by reference.

The claims are rejected for the reasons given in the office action mailed on Mar. 9, 2006, paragraph 26, which are incorporated herein by reference.

24. Applicants' arguments filed on Jun. 6, 2006, as applicable to the prior art rejections set forth in paragraphs 13-15

Art Unit: 1756

and 17-23 above have been fully considered but they are not persuasive.

Applicants assert that the none of cited prior art discloses or suggests that the surface of the photoconductor exposed by the light irradiator "is configured to reach the developer within 200 msec" or that "the light irradiator is configured to irradiate with an exposure energy of 5 erg/cm² or less when the write light has a resolution of 600 dpi or greater" as recited in instant claims 1 and 17.

Applicants' assertion is not persuasive. With respect to the rejections of claims 17 and 18 in paragraphs 13 and 14 above, the claims are directed to a process cartridge, not to the electrophotographic apparatus recited in instant claim 17. The recitations of how fast the photoconductor moves from the light irradiator to the developer and of how much energy is required refer to the apparatus, not to the process cartridge. Claim 17 does not require that the process cartridge comprise a light irradiator or a developer. Claim 17 recites that the "process cartridge comprises: an electrophotographic photoconductor and at least one unit selected from the group consisting of a charger, a light irradiator, a developer and a cleaner." As discussed in the rejections, the claim language "used as a detachable member and formed integral with an

Art Unit: 1756

electrophotographic apparatus . . ." is a statement of intended use, which does not result in a structural difference between the process cartridge recited in instant claims 17 and 18 from the process cartridge disclosed or rendered obvious over the prior art. Accordingly, the rejections of claims 17 and 18 in paragraphs 13 and 14 stand.

With respect to the prior art rejections in paragraphs 15 and 17-23, for the reasons discussed in the rejections in paragraphs 15 and 17-23 above, the cited prior art either discloses or renders obvious electrophotographic imaging apparatuses and process cartridges that meet all the structural limitations of the electrophotographic apparatus and process cartridge recited in the instant claims. Applicants have not pointed to any claimed structural feature of the electrophotographic apparatus and process cartridge that differs from those taught by the cited prior art. The instant claims are directed to an electrophotographic apparatus and a process cartridge, not to a method of forming an image. For the reasons discussed in paragraphs 15, 17, and 19 above, the recitations of how fast the photoconductor moves from the light irradiator to the developer and of how much energy is required in instant claims 1 and 17 are merely functional language describing how the photoconductor and the light irradiator in the apparatus are

Art Unit: 1756

intended to be employed. "Claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function." See MPEP 2114 and 2115 and cases cited therein. Accordingly, the recitations do not distinguish the structural elements in the instantly claimed apparatus and process cartridge from those in the apparatuses and process cartridges disclosed by or rendered obvious over teachings in the cited prior art. The rejections set forth in paragraphs 15 and 17-23 stand.

25. Claims 1-16 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-37 of US Patent No. 7,029,810 B2 (Toda) in view of Sakai.

The examiner notes that US Application No. 10/665,155 cited in the office action mailed on Mar. 9, 2006, has been issued as US Patent No. 7,029,810 B2 (Toda) on Apr. 18, 2006. The examiner also notes that the subject matter recited in claims 1-37 of Toda appears to be identical to that recited in claims 1-37 of Application No. 10/665,155. Accordingly, the claims are rejected for the reasons given in the office action mailed on Mar. 9, 2006, paragraph 28, which are incorporated herein by reference.

Art Unit: 1756

26. The following rejections are provisional obviousness-type double patenting rejections because the conflicting claims have not in fact been patented.

27. Claims 1-3, 5, 6 and 9-18 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting, as being unpatentable over claims 1, 5-10, and 12-19 of copending Application No. 0/454,556 (Application'556) in view of Sakai.

The examiner notes that the reasons for rejection are based on the claims as amended in the response filed in Application'556 on Apr. 30, 2007.

Reference claim 14, which depends on reference claim 5, which in turn depends on reference claim 1 of Application'556, recites an image forming apparatus comprising at least one image forming unit that comprises a photoreceptor, a charger, a light irradiator, an image developer, and a transferer. The photoreceptor comprises an electroconductive substrate comprising a charge generation layer and a charge transport layer disposed over the charge generation layer. The charge generation layer comprises titanyl phthalocyanine crystals that exhibit an X-ray diffraction pattern having a maximum peak at a Bragg angle ($2\theta \pm 0.2^\circ$) of 27.2° , a lowest peak at 7.3° , peaks at

Art Unit: 1756

9.4°, 9.6°, and 24.0°, no peaks between 7.3° and 9.4°, and no peak at 26.3°. The diffraction pattern is obtained by irradiating the titanyl phthalocyanine crystals with a Cu-K α X-ray having a wavelength of 1.542 Å. The titanyl phthalocyanine crystals have an average particle diameter of not greater than 0.2 μ m. The titanyl phthalocyanine crystals meet the titanyl phthalocyanine crystals recited in instant claims 1-3 and 17. Reference claims 7 and 8, which depend from reference claim 5, require that the photoreceptor further comprise a protective layer disposed on the charge transport layer that meets the protective layer limitations recited in instant claims 5 and 6, respectively. Reference claim 12, which depends from reference claim 5, requires that the conductive substrate have an anodized film as recited in instant claim 9. Reference claim 15, which depends from reference claim 14, requires that the apparatus comprises a plurality of image forming units, which meets the apparatus limitation recited in instant claim 10. Reference claims 16 and 17, which depend on reference claim 14, require that the charger be a contact charger or a non-contact charger as recited in instant claim 11 and in instant claims 12 and 13, respectively. Reference claim 18, which depends on reference claim 14, requires that an alternating superimposed voltage can be applied to the charger, which meets the charger limitation

Art Unit: 1756

recited in instant claim 14. Reference claim 19, which also depends from reference claim 5, recites a process cartridge comprising said photoreceptor and at least one of a charger, a light irradiator, an image developer, a transferer, and a cleaner.

The claims in Application'556 do not recite that the light irradiator provides a write light having a resolution of 600 dpi or greater as recited in the instant claims.

Sakai discloses a multi-beam scanning device to imagewise irradiate the charged photoconductor to form a latent electrostatic latent image. The multi-beam scanning device comprises a semiconductor laser (or laser diode) array **112** and a rotary polygonal mirror **152**. The scanning device provides a writing density of 1200 dpi and the laser beam has a beam spot diameter of 30 μm . The discussion of Sakai in paragraph 17 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art, in view of the subject matter recited in the claims of Application'556 and the teachings in Sakai, to use the Sakai multi-beam scanning device as the light irradiator in the apparatus and process cartridge claimed in Application'556. That person would have had a reasonable expectation of successfully obtaining an image forming apparatus and a process

Art Unit: 1756

cartridge that provide good quality reproduced images having a resolution of 1200 dpi.

Neither the claims of Application'556 nor Sakai recite that the surface of the photoreceptor "exposed by the light irradiator requires 200 msec or less to reach the developer" as recited in instant claims 1 and 17. Nor do they recite that the apparatus comprises "an exposure energy when the write light having a resolution of 600 dpi or greater is irradiated from the light irradiator to . . . photoconductor is 5 erg/cm² or less on the surface thereof" as recited in instant claims 1 and 17.

However, the recitations of how fast the photoreceptor moves from the light irradiator to the developer and of how much energy is required merely describe how the apparatus functions.

For the reasons discussed supra, the apparatus and process cartridge rendered obvious over the subject matter claimed in Application'556 combined with the teachings of Sakai meet all of the structural limitations recited in the instant claims. The functional recitations do not distinguish the structural elements in the instantly claimed apparatus and process cartridge from those in the apparatus and process cartridge rendered obvious over the subject matter claimed in Application'556 combined with the teachings of Sakai.

Art Unit: 1756

28. Claims 1-3, 5, 6, and 10-18 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-24 and 29-35 of copending Application No. 10/944,614 (Application' 614) in view of Sakai.

This is a provisional obviousness-type double patenting rejection.

The claims are rejected for the reasons given in the office action mailed on Mar. 9, 2006, paragraph 30, which are incorporated herein by reference.

29. Applicants' arguments filed on Jun. 6, 2006, as applicable to the rejections in paragraphs 25, 27, and 28 above have been fully considered but they are not persuasive.

Applicants submit that "a terminal disclaimer can be filed, if the claims in the present application and the claims in the co-pending Application 10/665,155 . . . 10/454,556 . . . 10/944,614 . . . remain obvious in view of each other at the time of allowance of either of these applications."

As noted in paragraph 25, the rejection over Application 10/665,155 is no longer provisional because the conflicting claims in Application 10/665,155 have been patented.

Application 10/655,155 issued as US Patent No. 7,029,810 B2 (Toda) on Apr. 18, 2006.

Art Unit: 1756

Because no terminal disclaimers have been filed in the instant application, the rejections, non-provisional or provisional, set forth in paragraphs 25, 27, and 28 stand.

30. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

31. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (571) 272-1382. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry regarding papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Claudia Sullivan, whose telephone number is (571) 272-1052.

Art Unit: 1756

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JLD

May 8, 2007

Janis L. Dote
JANIS L. DOTE
PRIMARY EXAMINER
GROUP 1500-
1700

Docket No.: 242548US2



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION: Tatsuya NIIMI, et al.

SERIAL NO.: 10/656,280

GAU: 1756

FILED: September 8, 2003

EXAMINER: DOTE, JANIS L.

FOR: ELECTROPHOTOGRAPHIC APPARATUS, PROCESS CARTRIDGE FOR
ELECTROPHOTOGRAPHIC APPARATUS, AND IMAGE FORMING METHOD

LETTER SUBMITTING REPLACEMENT DRAWING SHEET(S)

COMMISSIONER FOR PATENTS
Alexandria, VA 22313

SIR:

Responsive to the below indicated communication, the following drawing sheets are submitted herewith:

- ☒ 1 Replacement Drawing Sheet ☐ _____ New Drawing Sheets
- ☒ Notice of Non-Compliant Amendment dated June 13, 2006
- ☐ Notice of Allowance/Issue Fee dated _____
- ☐ Other dated _____

The changes and/or modifications made include the following:

Figure 13 has been corrected to add labeling of "Replacement Sheet".

Respectfully Submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

Raymond F. Cardillo Jr.
Gregory J. Maier

Registration No. 25,599

Raymond F. Cardillo, Jr.
Registration No. 40,440

Akihiro Yamazaki

Registration No. 46,155

Customer Number
22850

Tel. (703) 413-3000
Fax. (703) 413-2220
(OSMMN 06/04)

OK TO
ENTER
5/3/07
J.D.

IN THE DRAWINGS

The attached sheet of drawings includes changes to Fig. 13. This sheet, which includes Fig. 13, replaces the original sheet including Fig. 13.

Attachment: Replacement Sheet

DO NOT
ENTER
Date
5/3/07